# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/771,111 | 01/26/2001 | Ryusuke Sasaki | SIP1P042 | 7006 |

22434     7590     12/14/2004

BEYER WEAVER & THOMAS LLP
P.O. BOX 778
BERKELEY, CA 94704-0778

| EXAMINER |
|---|
| SANTIAGO, ENRIQUE L |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2671 | |

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>01 October 2004</u>.

2a)☐ This action is **FINAL**.          2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-14* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5,6,13 and 14* is/are allowed.

6)☒ Claim(s) *1-4, 7-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All  b)☐ Some *  c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

## DETAILED ACTION

### Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 8 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by

Dow, U.S. Patent No. 5,877,778.

-Regarding claim 1, Dow teaches a computer-readable recording medium for a video

game (column 3, line 7-11) for transforming a 3D object having a shape defined by a plurality of

vertices (see column 9, lines 22-25), the program causing the computer to: obtain the rotation

angle (see column 9, line 16) of each joint in a virtual skeleton of the 3D object (see column 9,

line 19) where the plurality of vertices corresponding to the joints according to animation data

defining the movement of the skeleton at every frame display period (see column 1, lines 63-65);

and calculating the rotation angle (see column 9, line 16) and a weight predefined for the vertex

corresponding to the joint and to move the vertex according to the rotation angle at every frame

display period (see column 1, line 65 to column 2, line 1, column 4, lines 47-58), wherein the

three dimensional object is constructed by a plurality of polygons, and each of the plurality of

polygons is constructed by a plurality of vertexes (see column 8, lines 20-25 and 39-45).

-Regarding claim 2, Dow further teaches a computer-readable recording medium wherein

the rotation angle of the vertex is calculated on the basis of one rotation angle relative to one

rotation axis determined with the obtained rotation angle of the joint and the weight predefined

for the vertex corresponding to the joint (see column 9, lines 1-2) and the vertex is moved to a

position obtained by rotating the vertex through the rotation angle about the one rotation axis

(see column 1, line 65 to column 2, line 1, column 4, lines 47-58).

-Regarding claim 7, the remarks presented above with respect to claim 1 apply equally to

this claim, and in addition Dow further teaches that the computer program stored in the computer

readable recording medium of claim 1, performs the method of transforming a three dimensional

object having a shape determined with a plurality of vertexes in a video game (see fig. 1, column

5, lines 4-8, column 8, lines 20-25 and 39-45).

-Regarding claim 8, the remarks presented above with respect to claim 2 apply equally to

this claim.

-Regarding claim 10, the remarks presented above with respect to claim 1 apply equally

to this claim, and in addition Dow further teaches a computer which includes the computer

program stored in the computer readable recording medium of claim 1, that performs the method

of transforming a three dimensional object having a shape determined with a plurality of vertexes

in a video game (see fig. 1, column 5, lines 4-8, column 8, lines 20-25 and 39-45).

-Regarding claim 11, the remarks presented above with respect to claim 1 apply equally

to this claim, and in addition Dow further teaches a computer which includes the computer

program stored in the computer readable recording medium of claim 1, that performs the method

of transforming a three dimensional object having a shape determined with a plurality of vertexes

in a video game (see fig. 1, column 5, lines 4-8, column 8, lines 20-25 and 39-45).

-Regarding claim 12, the remarks presented above with respect to claim 1 apply equally

to this claim, and in addition Dow further teaches determining an initial position for a plurality of

vertices corresponding to a plurality of joints and a second position for each of the vertices (see

column 4, lines 50-55) and moving the vertices to their respective positions (see column 4, line

59).

Claims 3, 4 and 9 are rejected under 35 U.S.C. 103(a)) as being unpatentable over Dow,

U.S. Patent No. 5,877,778 in view of Mohri U.S. Patent No. 6,515,669.

-Regarding claim 3, Dow discloses where the rotation angle of each joint is obtained for

each of the three rotation axes intersecting at right angles (see figs. 9B-C, "3D World

Coordinates") where in the movement of the vertices, one rotation axis and one rotation angle are

calculated on the basis of the three obtained rotation angles of the joints (column 9, lines 16-19);

and where the vertex is moved according to the calculated rotation angle of the vertex and the

one rotation axis at every display period (column 1, lines 63-65). Dow does not disclose where

the rotation angle is interpolated on the basis of the weight predefined for the vertex and the

rotation angle is calculated. However in similar art Mohri discloses determining joint rotation

angle data by interpolation (column 12, lines 22-25). Therefore it would have been obvious to a

person of ordinary skill in the art at the time the invention was made to determine joint rotation

angle data by interpolation, because interpolation is a standard technique for determining missing

or "middle" data.

-Regarding claim 4, Dow does not disclose using "sphere-linear" interpolation. As

pointed out in the rejection to claim 3 above, interpolation (a.k.a. "linear interpolation") is a

standard mathematical technique for determining missing data. The applicant uses the term

"sphere" to describe that the data involves angles, which if rotated around 3D axes, will

determine a sphere, therefore the remarks presented above with respect to claim 3 apply equally to this claim.

-Regarding claim 9, the remarks presented above with respect to claim 3 apply equally to this claim.

### Allowable Subject Matter

Claims 5, 6, 13 and 14 are allowed.

### Response to Arguments

Applicant's arguments filed on August 12, 2004 have been fully considered but they are not persuasive.

-Regarding the applicants arguments that Dow does not teach or suggest "that the three dimensional object is constructed by a plurality of polygons, and each of the plurality of polygons is constructed by a plurality of vertexes" the examiner disagrees. Dow does teach said limitation, see column 8, lines 20-25 that state *"Given the 3D position of the surrounding joints, the surface of that body region can be calculated and represented in various ways, including simple geometric shapes, polygon meshes, free form surfaces, or volume voxels. Each of these representations of the surface tissue is an appropriate way to use the output data produced by the algorithm of this invention"* and column 8, lines 39-45 which state *"This can be considered to be a display list of 3D points representing the basic graphic primitives that will be drawn on the computer screen. Such primitives include vertex points, line segments, polygon surfaces, and volume voxel density values"* Q.E.D.

## Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US patent no. 6,317,130 B1

US patent no. 6,384,819 B1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Enrique L Santiago whose telephone number is 703 306-5908. The examiner can normally be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman whose telephone number is 703 305-9798, can be reached on Monday to Friday from 7:00 A.M. to 3:30 P.M.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

703 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Enrique L. Santiago

December 6, 2004

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600